MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2022/2023

EHM3096 – PROJECT MANAGEMENT FOR ENGINEERS

(RE)

10 JULY 2023
9.00 a.m - 11.00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 6 pages (including the cover page) with 4 Questions only.

2. Attempt **ALL (4)** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

Question 1

	Customer Ideal Spec	A	B	C	Our Product, MMU123
Supply Voltage VDD	5V	3V - 6V	3V - 5V	3.3V - 5.5V	2V - 8V
Temperature Range	100C	0C - 125C	10C - 100C	-40C - 150C	10C - 100C
Temperature Accuracy	±3C	±2C	±3C	±0.5C	±3C
Active Current Consumption	100mA	150mA	100mA	75mA	50mA
Price		$ 6.70	$ 7.50	$ 15.90	$ 7.00

A new business opportunity has been discovered in the **Temperature Sensor** market. 3 competitors for the socket have been identified. By comparing the products above, discuss

(a) What are the main selling points for our product? (2 marks)
(b) Prepare an elevator pitch for our product (2 marks)
(c) The customer has decided to make a purchase of 500,000 units per quarter. According to the operations planner, the current capacity for the factory can only produce 400,000 units per quarter.
  (i) Suggest 2 projects that can be done to improve capacity (2 marks)
  (ii) Discuss one potential risk per project (2 marks)
  (iii) Give one suggestion to address each risk (2 marks)

The following cost is required for your project.

Initial Investment	$ 200,000.00
Personnel cost per year	$ 75,000.00
Maintenance cost per year	$ 35,000.00
Raw material costs per year	$ 125,000.00
Revenue for year 1	$ 200,000.00
Revenue for year 2	$ 225,000.00
Revenue for year 3	$ 250,000.00
Revenue for year 4	$ 300,000.00
Revenue for year 5	$ 400,000.00

(d) When compared to an investment fund with **10% return**, calculate the NPV. (5 marks)

(e) Should you invest in this project? Why? (2 marks)

For a project that requires $300,000 as initial investment and provides a monthly net revenue of $35,000, calculate:

(f) The Payback Period (4 marks)
(g) The Return of Interest (%) (4 marks)

Continued ...

Question 2

(a) A Project Manager is explaining her role to another department's staff member who wants to understand what Project Management is all about. She would describe project management as:

(4 marks)

(b) During planning, you discover that the time needed to complete the project is longer than available time. As Project Manager, give 2 solutions, what could you do?

(4 marks)

(c) Your lead engineer has provided you with the following cost estimation for a critical activity for your project. What is the expected cost of this activity using PERT method?

- Most Likely = RM57
- Best guess estimation = RM43
- Conservative estimation = RM 71

(2 marks)

(d) One of the 7 QC tool is Pareto. Pareto analysis is a statistical technique commonly used. Discuss Pareto analysis.

(2 marks)

(e) During project planning phase, you as Project manager compiled all planned activities and required duration for each activity with its dependencies as the following table.

Activity	Duration (days)	Precedents	Man/day
A	4	-	4
B	2	A	3
C	3	A	2
D	8	C	5
E	3	B	2
F	5	E	3
G	5	C	3
H	1	D, F, G	1

(i) Draw the network diagram with Activity-on-Node (AON) (8 marks)
(ii) Determine the Critical Path with network diagram (4 marks)
(iii) Determine the project duration (1 marks)

Continued ...

Question 3

(a) Name **ANY FIVE** of the Tools & Techniques to Identify Risks Process.

(5 marks)

(b) Name all four elements of SWOT Analysis.

(4 marks)

(c) You are the founder of your company New Horizon Sdn Bhd. You started the company since 2018. You are doing well in the starting of 2018, but soon faced the downfall due to Covid-19 in 2020. After several years of struggle, you managed to survive, but facing tremendous challenge ahead. You knew very well that you need to secure a new business direction in order to survive, which you did. You listed down the potential directions, and summarized into three different directions namely the Robotic System, the AI, and the IoT, respectively. Each of these direction requires different capital injection, with different projected outcome. Figure Q3.1 illustrates the decision tree diagram of these directions.

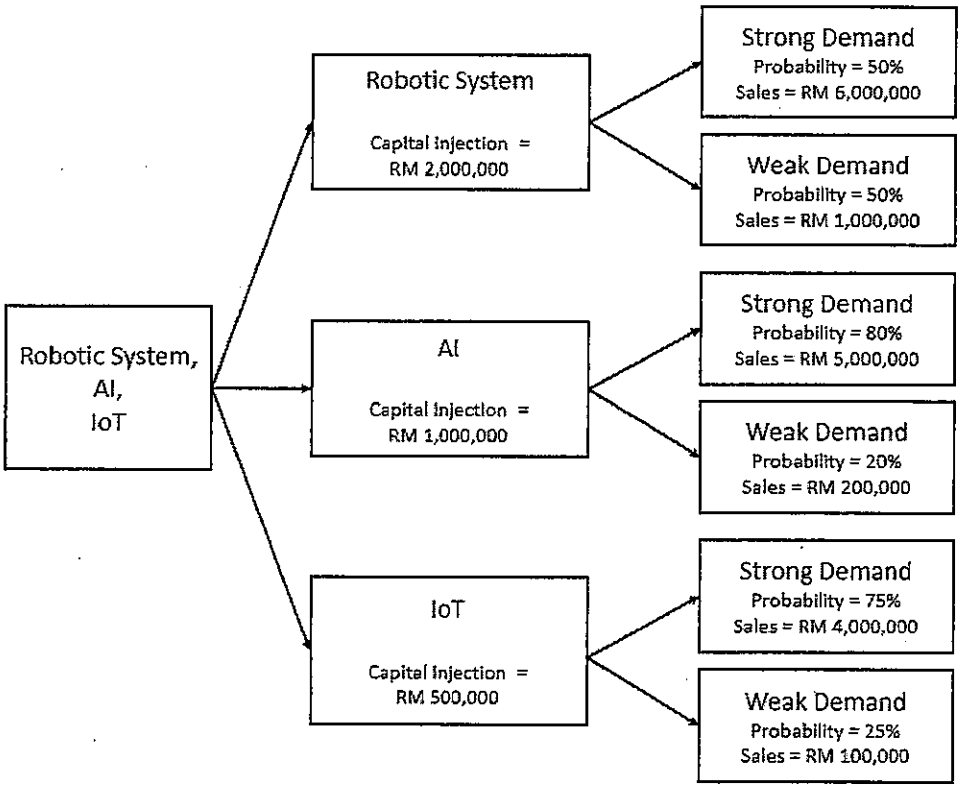

Figure Q3.1 Decision Tree Diagram

(i) Calculate the Expected Monetary Value, or the EMV of all the three options.

(6 marks)

(ii) Based on the calculated EMV, which is the most reasonable direction that you should proceed? Explain.

(5 marks)

Continued ...

(iii) After choosing your direction, you started doing your project planning part, and eventually you planned on the strategies for the Risk Responses. Please identify the strategies for the following scenarios:

a. You filed patent to protect your intellectual property. (1 mark)

b. You purchase fire insurance for your company. (1 mark)

c. You create a backup server for your main server. (1 mark)

d. You schedule regular maintenance over the machinery. (1 mark)

e. You create hierarchical structure for company's organization structure over R&D. (1 mark)

Continued ...

Question 4

(a) Project control is important to identify deviations, evaluate courses of action, and take appropriate corrective action. What are the 4 project control steps? (5 marks)

(b) You have been engaged by a client as Project Manager to build a customized beach. You were monitoring the progress of the project by monitoring the figures on cost, plan and earned value for each individual project month until 7th month.

(i) Please sketch the EVM chart and label accordingly.

Month	PV (RM)	AC (RM)	EV (RM)
1	10,000	9,000	8,500
2	100,000	95,000	90,000
3	350,000	330,000	320,000
4	500,000	470,000	450,000
5	650,000	620,000	600,000
6	750,000	725,000	700,000
7	900,000	860,000	800,000

(6 marks)

(ii) Calculate the Schedule Variance (SV) and Cost Variance (CV) on the fifth month in the chart. (4 marks)

(iii) Calculate the Cost Performance Index (CPI) & Schedule Performance Index (SPI). (4 marks)

(iv) Describe the situation/performance of the project on that month. (2 marks)

(c) Please explain what is variance? (1 mark)

(d) Project managers understand the importance of capturing lesson learnt after each project. It is good for the project team, organization, the running and upcoming projects. Please state down why lesson learnt is important to a project. (3 marks)

End of Paper.